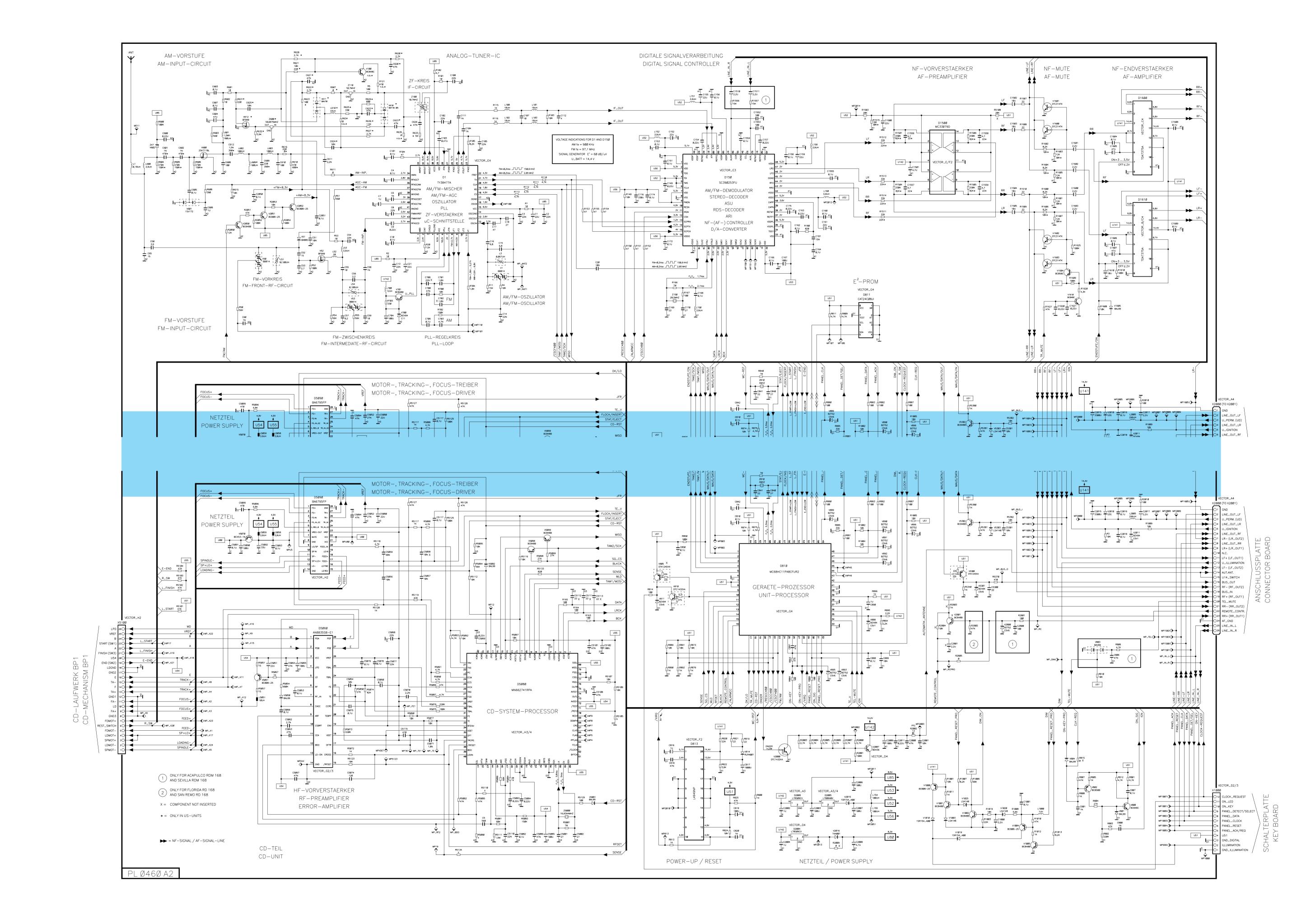


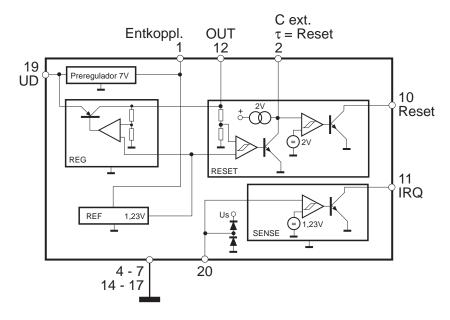
| Prüfdiagnose Tuner IC (D1) Diagnosis test tuner IC (D1) |      |          |            |          |                        |                        |  |  |
|---|------|----------|------------|----------|------------------------|------------------------|--|--|
| Pin   | Band | Frequenz | E'         | Uss      | Vermerke               | Notice                 |  |  |
| 24+25 (ZF-OUT)  | FM   | 97,1 MHz | 83 dbμV    | 650 mVss | jeweils gegen Masse    | respective against GND |  |  |
| 28  | FM   | 97,1 MHz | 80 dbμV    | 25 mVss  |                        |                        |  |  |
| 31+32   | FM   | 97,1 MHz | 80 dbμV    | 200 mVss | jeweils gegen Masse    | respective against GND |  |  |
| 31+32   | AM   | 900 kHz  | 80 dbμV    | 200 mVss | jeweils gegen Masse    | respective against GND |  |  |
| 34 (AM-IN)  | AM   | 900 kHz  | 80 dbμV    | 50 mVss  |                        |                        |  |  |
| 36  | AM   | 900 kHz  | ab 73 dbμV |          | künstliche Antenne aus | not commutated         |  |  |
| 37  | FM   | 97,1 MHz | ab 80 dbμV |          |                        |                        |  |  |
| 43 (FM-IN)  | FM   | 97,1 MHz | 94 dbμV    | 5 mVss   |                        |                        |  |  |

| Pin-Belegung des FM/AM Tuner-IC D1 Tuner IC D1 Pin configuration |        |                          |  |   |  |  |
|--|--------|--------------------------|--|---|--|--|
| Pin No.  | I/O    | Name                     | Funktion   | Function  |  |  |
| 1  | -      | MIXDEC                   | Mischer Entkopplung  | Mixer decoupling  |  |  |
| 2  | -      | CINT                     | für PLL  | for PLL   |  |  |
| 3  | -      | CHOLD                    | für PLL  | for PLL   |  |  |
| 4  | -      | PLLGND                   | PLL - Masse  | PLL Ground  |  |  |
| 5  | -      | VCC                      | 8,5V   | 8,5V  |  |  |
| 6  | -      | VPLL                     | PLL Oberspannung   | PLL top voltage   |  |  |
| 7  | -      | LFINP                    | Schleifenfiltereingang                                     | PLL loop filter Input PLL loop filter Output 1 PLL loop filter Output 2 |  |  |
| 8  | 0      | LF1                      | Schleifenfilter 1  |   |  |  |
| 9  | 0      | LF2                      | Schleifenfilter 2  |   |  |  |
| 10   | 0      | LF3                      | Schleifenfilter 3  | PLL loop filter Output 3 Tuning voltage Oscillator Input                |  |  |
| 11   |        | VTUNE                    | Abstimmspannung  |   |  |  |
| 12   |        | OSCINP                   | Oszillator Eingang   |   |  |  |
| 13   | 0      | OSCOUT                   | Oszillator Ausgang   | Oscillator Output   |  |  |
| 14   | -      | OSCGND                   | Oszillator Masse   | Oscillator Ground   |  |  |
| 15   | 0      | VCC                      | 8,5V   | 8,5V  |  |  |
| 16<br>17<br>18   | 0      | OSCBUF<br>DGND<br>CS     | Oszillatorausgangstreiber<br>Digitale Masse<br>Chip Select | Oscillator Buffer Output Digital Ground Chip Select                     |  |  |
| 19<br>20<br>21   | <br>   | RD<br>CLK<br>TX          | Dateneingang<br>Clock<br>Datenausgang                      | DATA IN<br>Clock<br>DATA OUT  |  |  |
| 22<br>23<br>24   | -<br>0 | FREF<br>IFAGC2<br>IFOUT1 | Referenzfrequenz<br>ZF Regelspannung 2<br>ZF - Ausgang 1   | Reference frequency IF AGC 2 IF output 1                                |  |  |
| 25   | O      | IFOUT2                   | ZF - Ausgang 2   | IF output 2 IF AGC 1 IF Ground  |  |  |
| 26   | -      | IFAGC1                   | ZF Regelspannung 1   |   |  |  |
| 27   | -      | IFGND                    | ZF Masse   |   |  |  |
| 28<br>29<br>30   | -<br>- | IFIN<br>VDC<br>VCC       | ZF Eingang<br>Interne Referenzspannung<br>8,5V             | IF Input<br>Internal reference voltage<br>8,5V                          |  |  |
| 31   | 0      | MIXOUT2                  | Mischerausgang 2   | Mixer Output 2  |  |  |
| 32   | 0      | MIXOUT1                  | Mischerausgang 1   | Mixer Output 1  |  |  |
| 33   | -      | AMREF                    | AM - Referenzeingang                                       | AM reference Input  |  |  |
| 34   | I      | AMMIXIN                  | AM Mischereingang  | AM Mixer Input  |  |  |
| 35   | -      | RFAGC3                   | HF Regelzeitkonstante (aufregeln)                          | RF AGC 3  |  |  |
| 36   | 0      | RFAGCAM                  | HF Steuerspannung Vorstufe AM                              | RF AGC for AM input stage   |  |  |
| 37   | O      | RFAGCFM                  | HF Steuerspannung Vorstufe FM                              | RF AGC for FM input stage   |  |  |
| 38   | -      | MIXGND                   | Mischer Masse  | Mixer Ground  |  |  |
| 39   | -      | RFAGC2                   | HF Regelzeitkonstante (Detektor)                           | RF AGC 2  |  |  |
| 40   | -      | RFAGC1                   | HF Regelzeitkonstante (abregeln)                           | RF AGC 1  |  |  |
| 41   | -      | ANGGND                   | Analog Masse   | Analog ground   |  |  |
| 42   | -      | FMMIXREF                 | Referenzspannung FM Mischer                                | Reference voltage FM mixer  |  |  |
| 43   | -      | FMMIXINP                 | FM Mischer Eingang   | FM mixer input  |  |  |
| 44   |        | RFAGCD                   | AGC Entkopplung  | AGC decoupling  |  |  |

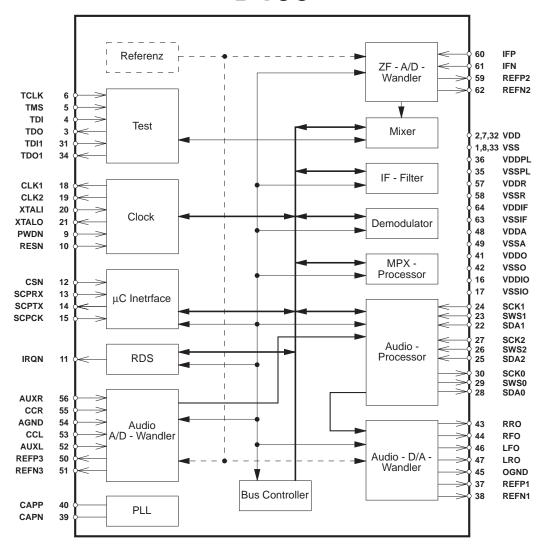
| Pin-Belegung des IC D150 Digital IC D150 Pin Configuration |      |                     |  |   |  |  |  |
|--|------|---------------------|--|---|--|--|--|
| Pin No.  | I/O  | Name                | Funktion   | Function  |  |  |  |
| 1  | -    | VSS                 | Masse  | Ground  |  |  |  |
| 2  | -    | VDD                 | 5 V  | 5 V   |  |  |  |
| 4  | I    | TDI                 | Testdateneingang   | Test Data Input   |  |  |  |
| 5  | 1    | TMS                 | Test Mode  | Testmode  |  |  |  |
| 6  | 1    | TCKL                | Test Clock   | Testclock   |  |  |  |
| 7  | -    | VDD                 | 5 V  | 5 V   |  |  |  |
| 8  | -    | VSS                 | Masse  | Ground  |  |  |  |
| 9  | -    | PWDN                | Power down Zustand   | Power down Mode   |  |  |  |
| 10   | I    | RESN                | Reset  | Hardware reset (active LOW)   |  |  |  |
| 11   | O    | IRQN                | RDS Alarm/SLS  | RDS alarm/search stop   |  |  |  |
| 12   | I    | CSN                 | Chip select Eingang  | Chip select μC interface  |  |  |  |
| 13   | I    | SCPRX               | Serielle Daten µC Interface  | Serial data μC interface IN   |  |  |  |
| 14   | O    | SCPTX               | Serielle Daten μC Interface  | Serial data μC interface OUT  |  |  |  |
| 15   | I    | SCPCK               | Clock μC Interface   | Clock μC interface  |  |  |  |
| 16   | -    | VDDIO               | Plusspannung Digitale Ein-/Ausgänge  | Voltage for digital I/O   |  |  |  |
| 17   | -    | VSSIO               | Masse Digitale Ein-/Ausgänge   | Ground for digital I/O  |  |  |  |
| 18   | O    | CKL1                | Programmierbarer Clock 1   | Programmable clock 1  |  |  |  |
| 20   | I    | XTALI               | 28,5 MHz Oszillator  | Oscillator 28,5 MHz   |  |  |  |
| 21   | O    | XTALO               | 28,5 MHz Oszillator  | Oscillator 28,5 MHz   |  |  |  |
| 31   | I    | TDI1                | Testdateneingang 1   | Test Input 1  |  |  |  |
| 32   | -    | VDD                 | 5 V  | 5 V   |  |  |  |
| 33   | -    | VSS                 | Masse  | Ground  |  |  |  |
| 35   | -    | VSSPLL              | Masse (Minus) PLL  | Ground (minus) PLL  |  |  |  |
| 36   | -    | VDDPLL              | Plus PLL 5V  | PLL 5V (pos.)   |  |  |  |
| 37   | 0    | REFP1               | Audio D/A-Wandler Positive Referenz  | Audio D/A converter (pos. reference) Audio D/A converter (neg. reference) PLL capacity (neg.) |  |  |  |
| 38   | 0    | REFN1               | Audio D/A-Wandler Negative Referenz  |   |  |  |  |
| 39   | -    | CAPN                | PLL Kapazität (negativ)  |   |  |  |  |
| 40   | -    | CAPP                | PLL Kapazität (positiv)  | PLL capacity (pos.) Audio D/A converter (+5V) Audio D/A converter (ground)                    |  |  |  |
| 41   | -    | VDDO                | Audio D/A - Wandler 5V   |   |  |  |  |
| 42   | -    | VSSO                | Audio D/A - Wandler Masse  |   |  |  |  |
| 44   | O    | RFO                 | Audio Rechts (analog)  | Analogic audio right  |  |  |  |
| 45   | -    | OGND                | Masse Analogausgänge   | Ground  |  |  |  |
| 46   | -    | LFO                 | Audio Links (analog)   | Analogic audio left   |  |  |  |
| 48   | -    | VDDA                | 5V A/D - Wandler   | 5V A/D - converter  |  |  |  |
| 49   | -    | VSSA                | Masse A/D - Wandler  | Ground A/D - converter  |  |  |  |
| 50   | O    | REFP3               | Audio D/A-Wandler Positive Referenz  | Audio D/A converter (pos. reference)  |  |  |  |
| 51   | O    | REFN3               | Audio D/A-WandlerNegative Referenz   | Audio D/A converter (neg. reference)  |  |  |  |
| 52   | I    | AUXL                | Externer Eingang links   | Auxillary left  |  |  |  |
| 53   | I    | CCL                 | Cassette Eingang links   | Cassette input left   |  |  |  |
| 54   | -    | AGND                | Audioeingänge Masse  | Ground for Audio inputs   |  |  |  |
| 55   |      | CCR                 | Cassette Eingang rechts  | Cassette input right  |  |  |  |
| 56   |      | AUXR                | Externer Eingang rechts  | Auxillary left right  |  |  |  |
| 57   | -    | VDDR                | 5 V  | 5 V   |  |  |  |
| 58   | -    | VSSR                | Masse  | Ground  |  |  |  |
| 59   | O    | REFP2               | Audio D/A-Wandler Positive Referenz  | Audio D/A converter (pos. reference)  |  |  |  |
| 60<br>61<br>62   | <br> | IFP<br>IFN<br>REFN2 | ZF Eingang (plus)<br>ZF Eingang (minus)<br>Audio D/A-Wandler Negative Referenz | Positif IF input<br>IF input (neg.)<br>Audio D/A converter (neg. reference)                   |  |  |  |
| 63   | -    | VSSIF               | ZF A/D - Wandler (minus)   | IF A/D converter (-) IF A/D converter (+5V)   |  |  |  |
| 64   | -    | VDDIF               | ZF A/D - Wandler 5 V   |   |  |  |  |

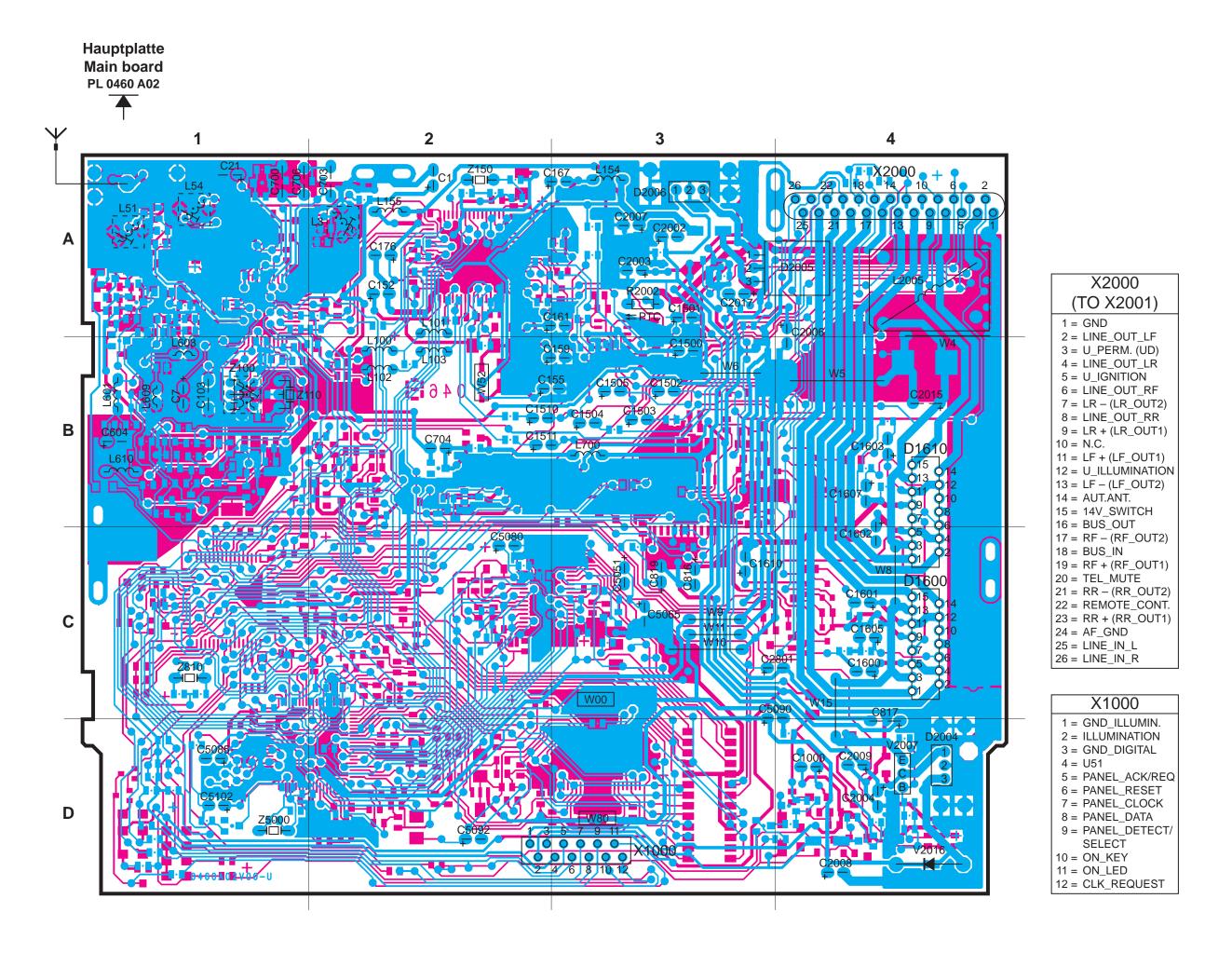


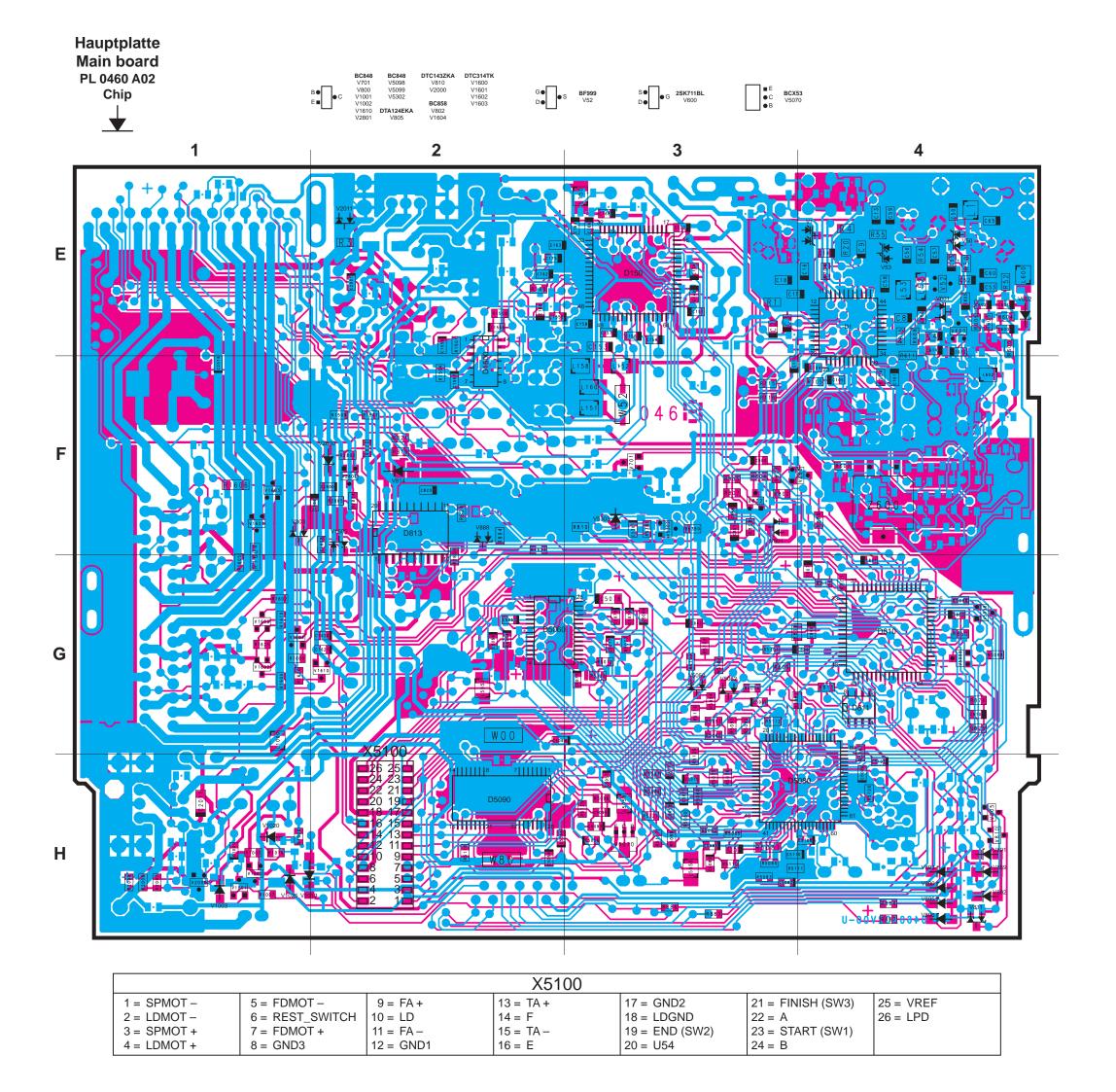
## L4949 / D813



## D150







Hauptplatte Main board PL 0460 A02 Chip





